

## Members of young associations, moving groups and nearby brown dwarfs.

Ed Gillen, Suzanne Aigrain (University of Oxford)

We propose to include, among the targets monitored by K2 in campaign 1, all the members of known moving groups and associations which we were able to identify based on a basic literature search. We can learn a lot from monitoring these stars because we have an age estimate from them, by virtue of their membership. Furthermore, they are nearby and thus amenable to parallax measurements and detailed characterisation with a range of instruments. The very local nature of these associations means that their members are spread all over the sky, so each K2 campaign contains a few tens of such targets, which we should not miss the opportunity to monitor. We therefore performed a basic search for members of nearby associations and moving groups that could be observed in K2 campaign 1, by searching for VizieR catalogs containing relevant keywords and having objects within an 8.5 degree radius of the pointing centre. During this search we also found 7 nearby brown dwarfs, one of which is a candidate member of the Hyades moving group, as well as an exoplanet candidate host star. We then used the K2fov tool to select 12 objects which will be “on silicon”. We also include a further 7 objects which are listed as “near silicon”, in case the exact pointing is modified (see Figure 1).

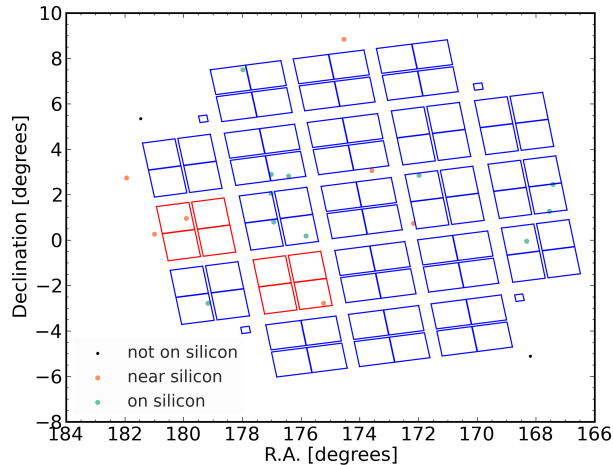


Figure 1: K2 field of view for campaign 1 showing the locations of our proposed targets.

K2 observations of these targets will reveal intrinsic variability associated with magnetic activity (and hence enable us to measure rotation periods). Among the later spectral types, we may also observe variability associated with patchy dust cloud coverage, rather than spots. We will also search for occultations by companions (stellar or planetary) - any such detection would have a major impact. In the case of the youngest objects, we may also observe accretion-related variability or occultations by circumstellar dust, e.g. in a warped or clumpy disk. Importantly, any interesting phenomena revealed by K2 observations will be readily followed up using ground based instruments (spectroscopy, high resolution imaging, polarimetry and interferometry).

Although this sample is relatively small per se, if we ensure that the observable members of young associations and moving groups are included in each campaign throughout the lifetime of K2, we will gradually build up a statistically useful sample.

### Targets were selected from the following literature sources:

Jameson et al. 2008, MNRAS, 384, 1399	Schlieder et al. 2012, AJ, 143, 80
Montes et al. 2001, MNRAS, 328, 45	Tetzlaff et al. 2011, MNRAS, 410, 190
Orlov et al. 1995, AZh, 72, 495	Wright et al. 2011, ApJ, 743, 48